WAIS Overview

Wireless Advanced Instrumentation System (WAIS)

The system includes:

- A High Speed Data Acquisition Hub.
- An enhanced XT01 tag for remote data capture.
- A charger and backup wired connection for the Enhanced XT01 tag.
- Cables (5 meter USB, 10 meter Ethernet and Power).
- Ruggedized IP66 carry case.
- Intuitive control and data analysis software.

Introduction

The Instrumentel Advanced Wireless Instrumentation System (WAIS) is a high performance cost effective solution to data acquisition. The system is comprised of the following elements.

- An Instrumentel Diagnostic Hub configured to offer high speed data acquisition from a variety of sensor types, both over wired and wireless channels.
- An enhanced XT01 which features the world leading XT01 near field telemetry transponder supplemented with minimal battery power, non-volatile memory and sensor conditioning.
- An elegant and intuitive software user interface for controlling and configuring all aspects of the acquisition system, including the remote wireless tag, according to user requirements.

The high speed diagnostic hub acts as an interface between the user's personal computer or network and the sensors to be sampled. Up to 3 sensors can be connected (wired) directly to the hub, each channel providing a channel sampling bandwidth of 500k (10-bit) samples per channel. The Hub supports Ethernet and high speed USB transfer of data and control signals.

Remote (wireless) sensing using an enhanced XT01 tag comprising the world leading Instrumentel XT01 silicon on insulator transponder, supplemented with components to provide semi-passive near field communications, multi-sensor sampling and an-tag storage.

The Instrumentel Advanced Instrumentation System has been designed specifically to enable robust and reliable, high speed data acquisition from sensors deployed in extreme environmental conditions or awkward to access places, as found in field instrumentation, experimental and industrial settings.

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Specifications

System Contents

- Case
- High speed data acquisition hub
- XT01 data acquisition tag
- Battery charger and direct connection unit
- Tag and hub antennas
- 24V DC Power-supply
- All necessary cables (USB, Ethernet and power)

Diagnostic Hub with High Speed Data Acquisition

Sensor Inputs: Pressure, strain and temperature
Sample rates: 500 K samples per second
Sample resolution: 10-bit RAM capture, 8-bit continuous USB capture.
Processing: Embedded 32bit ARM processor, 3 x FPGA's for parallel processing and DSP
Data Storage: 64 Mb volatile RAM for high speed data capture, Solid state Memory µSD card 1GB as standard, fully expandable
Firmware: Upgradeable via Ethernet boot-loader
Interfacing: Ethernet and high speed USB
Power Input: 24 VDC nominal, 12-80 VDC
Wireless Interface: 13.56 MHz, Instrumentel proprietary protocol
Power: DC Power Connection, +24V

Enhanced XT01 Tag

Communication interfaces: Direct connection and wireless
Memory: 2M bit Ferroelectric
Condition circuits: 3 Instrumentation amplifiers
Gain Settings: 1x, 2x, 5x, 10x, 20x, 50x and 100x
Battery: 2 x Li-Ion cells, 90mAhr total

Sensor Inputs: Pressure, strain and thermocouple
Maximum Sample Rate: 60k samples per second per channel (single channel)
Sample Rate: up to 25K samples per channel (multi-channel)
Trigger: Sensor level (positive and negative), direct connection or wireless interfaces

Software Key Features

- Auto-negotiates multiple connection types
- Quickly graphs large capture files (long duration)
- Data immediately available to view post capture
- Intuitive capture and calibration wizards
- Various exporting options
- Basic data filters to remove unwanted sensor noise

Product Family